

LEADING BY EXAMPLE

A Report to the President on Federal Energy and Environmental Management (2000-2001)



December, 2002



OFFICE OF THE FEDERAL ENVIRONMENTAL EXECUTIVE

WHITE HOUSE TASK FORCE ON WASTE PREVENTION AND RECYCLING

1200 PENNSYLVANIA AVENUE, NW MAIL CODE 16005 WASHINGTON, DC 20460

(202) 564-1297 WWW.OFEE.GOV TASK_FORCE@OFEE.GOV

PROMOTING SUSTAINABLE ENVIRONMENTAL STEWARDSHIP THROUGHOUT THE FEDERAL GOVERNMENT

December 2, 2002

The Honorable George W. Bush
President of the United States
The White House
Washington, D.C. 20500

Dear Mr. President:

On behalf of the White House Task Force on Waste Prevention and Recycling, I am pleased to submit to you the biennial Report on Federal Energy and Environmental Management for 2000–2001.

You have called on the Federal government to lead by example, be a good neighbor, and be a good environmental steward. This report highlights the activities and accomplishments of the Federal community in meeting your charge and also makes recommendations for improvements.

You will be pleased to know that:

- More than 180 Federal facilities have developed and are implementing environmental management systems, strategic frameworks for ensuring compliance with environmental requirements, integrating environmental accountability into day-to-day decision making and planning, and urging continual improvement.
- The Federal government's energy intensity (energy use per square foot) has decreased 23 percent since 1985, saving taxpayers \$1.4 billion over this time span. From FY 1990 to 2001, total carbon emissions from energy used in Federal facilities declined by 2.8 million metric tons of carbon equivalent (MMTCE). This is equal to removing almost 2.1 million cars from the road for one year.
- In FY 2001, agencies reported implementing 125 alternatively-financed energy projects through which the private sector invested approximately \$477 million, for a life-cycle cost savings of \$1.2 billion. According to initial agency estimates, the Government will retain approximately one-third of these savings (the balance will be used to pay the contractor with interest), and the Nation will benefit by reduced pollution and increased energy security associated with sustained reductions in energy use.

- More than 250 Federal buildings have qualified as Energy Star® buildings for their high energy efficiency. From FY 2000 to FY 2001, Federal agencies tripled their purchase of electricity and thermal energy from renewable sources, to 632 gigawatt hours, enough to service 60,000 households for a year.
- From FY 2000 to FY 2001, Federal agencies had a sixfold increase in their consumption of alternative fuels (such as ethanol, biodiesel, and compressed natural gas), from 1.3 to 8.6 million gasoline gallon equivalents. In FY 2000, Federal agencies purchased nearly 8,000 new alternative fuel vehicles, bringing the total Federal fleet of such vehicles to 55,000.
- In FY 2001, an average of more than 650,000, or approximately 22 percent of all Federal employees, commuted to work other than by single-occupancy vehicles, helping reduce traffic congestion and air pollution.
- In FY 2001, Federal agencies purchased nearly \$500 million in products containing recycled content. Over the last decade, the Federal government has purchased more than \$3.6 billion of such products. Federal agencies and government contractors now buy more than 50 types of recycled content products designated by the Environmental Protection Agency. Federal procurement is developing markets for and reducing costs of recycled content products and other “green” products.

We are working hard to ensure the Federal government does its part to use our resources wisely so that we can make our communities more livable, our businesses more competitive, and our world a cleaner place for our children and grandchildren to enjoy.

Sincerely,

A handwritten signature in black ink, appearing to read "John L. Howard, Jr.", written in a cursive style.

John L. Howard, Jr.
Federal Environmental Executive

Enclosure

PREFACE

This report was prepared by an Interagency Committee of the White House Task Force on Waste Prevention and Recycling (Task Force) to consolidate information and provide a status report on Federal compliance with environmental and energy-related Executive Orders. This is the second such biennial report developed for the President.

Section 302(a)(2) of Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, requires a biennial report to the President by the Federal Environmental Executive (FEE), working through the Task Force, on actions taken by Federal agencies to fulfill the requirements of all the Orders. In addition, Section 306 of Executive Order 13123, *Greening the Government Through Efficient Energy Management*, requires the Deputy Director for Management of the Office of Management and Budget (OMB), in consultation with the Department of Energy (DOE), to evaluate agencies' energy scorecards and report to the President on their progress in implementing this Order. The information in this report fulfills these requirements.

This report covers implementation of the following Executive Orders:

E.O. 13221	Energy-Efficient Standby Power Devices	July 31, 2001
E.O. 13212	Actions to Expedite Energy-Related Projects	May 18, 2001
E.O. 13211	Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution or Use	May 18, 2001
E.O. 13150	Federal Workforce Transportation	April 21, 2000
E.O. 13149	Greening the Government through Federal Fleet and Transportation Efficiency	April 21, 2000
E.O. 13148	Greening the Government Through Leadership in Environmental Management	April 21, 2000
E.O. 13134	Developing and Promoting Biobased Products and Bioenergy	August 12, 1999
E.O. 13123	Greening the Government Through Efficient Energy Management	June 03, 1999
E.O. 13101	Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition	Sept. 14, 1998

A great deal of information on the Federal government's efforts to meet these Executive Orders and improve its stewardship can be found on the Internet, including at the following web sites:

Alternative Fuels	http://www.afdc.doe.gov
Biobased Products and Bioenergy	http://www.bioproducts-bioenergy.gov
Comprehensive Procurement Guidelines	http://www.epa.gov/cpg
Electronics Stewardship	http://www.epa.gov/epr/products/electronics.html
Energy Management and Efficiency	http://www.eren.doe.gov/femp
Environmental Management Systems	http://www.epa.gov/ems/ http://www.ofee.gov
Environmentally Preferable Purchasing	http://www.epa.gov/oppt/epp
Executive Orders	http://www.ofee.gov
Federal Fleet/AFV	http://www.ott.doe.gov/epact/fed_fleet_prog.shtml
Green Buildings	http://www.sustainable.doe.gov/buildings/usgovbe.shtml http://www.epa.gov/greeningepa http://www.wbdg.org/
Ozone-Depleting Substances	http://www.epa.gov/docs/ozone/index.html
Pollution Prevention	http://www.epa.gov/oeca/main/fedgov/index.html
Right To Know	http://www.epa.gov/opp/tintr/tri
Recycling, Waste Prevention, & Federal Acquisition	http://www.ofee.gov http://www.epa.gov/epaoswer/osw http://www.epa.gov/epaoswer/non-hw/muncpl http://www.fss.gsa.gov/enviro
Standby Power	http://www.eren.doe.gov/femp/resources/standby_power.html
Sustainability	http://www.federalsustainability.org

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INTRODUCTION

“Stewardship is the calling of government, and it is the calling of every citizen.”

(April 18, 2002)

“The Federal government can be a good steward of our resources, and we fully intend to be.”

(July 31, 2001)

-- President George W. Bush



With its spending of approximately \$250 billion each year on goods and services, its presence in communities across the country, and its regulatory role in the daily lives of governments, businesses, and individuals, the Federal government has a significant opportunity – and obligation – to lead by example, be a good neighbor, and be a good steward of our resources. Through laws and executive orders, innovative practices and new technologies, and partnerships and entrepreneurial determination, the Federal government is working with state and local governments, community organizations, business, universities, and interested Americans to improve our stewardship and strive to operate more sustainably.

This report identifies the Federal government’s progress in 2000 and 2001 in moving toward making its operations more environmentally sustainable and energy efficient, for this generation and those to follow. The report notes that Federal agencies are aggressively adopting environmental management systems as tools to ensure compliance with regulatory requirements, integrate environmental considerations into daily decision making and long-term planning, and work to continually make improvements. The report also describes the Federal government’s efforts to prevent waste and pollution and, when those are not possible, to recycle; to procure a range of “green” products, including energy efficient, environmentally preferable, and biobased products; to improve energy efficiency, promote renewable energy, and build and operate more sustainable buildings; and to acquire alternative fuels and vehicles.

The individual chapters describe key accomplishments and highlight success stories regarding each major topic. The report then concludes with recommendations to continue improving the Federal government’s role as a leader in energy and environmental management.

ENVIRONMENTAL MANAGEMENT

Major Goals under E.O. 13148

- *Conduct agency-level environmental management systems review by October 2001.*
- *Implement environmental management systems at appropriate Federal facilities by December 2005.*
- *Further reduce toxic chemical releases 40 percent by December 2006.*

An environmental management system (EMS) is a strategic approach to ensuring that an organization's environmental priorities are integrated into the organization's operational, planning, and management decisions. An EMS provides a mechanism to address environmental issues through measured problem identification and response, rather than crisis management, and requires periodic senior management review and a formal commitment to continuous improvement. A well-implemented EMS ensures and improves regulatory compliance and environmental performance; increases efficiency; enhances accountability; reduces costs, risks, and potential liability; and enhances employee morale and community relations.

POLICIES

Executive Order 13148, Greening the Government Through Leadership in Environmental Management, established a framework for integrating environmental considerations into each Federal agency's mission through a variety of directives and goals, including the implementation of environmental management systems, reductions in releases of toxic chemicals, and elimination of procurement of ozone depleting substances. The E.O. requires that an EMS be implemented at appropriate Federal facilities by the end of 2005, based on a facility's size, complexity, and environmental aspects. To facilitate awareness and acceptance of the EMS concept at the facility level, agencies were required to initiate EMS pilots at agency facilities in early 2002. In addition, each agency was required to prepare and endorse a written agency environmental management strategy to achieve the requirements and goals of the Order. Such a policy is recognized as critical to the success of an EMS.

Management system accounting concepts, such as life-cycle assessment, environmental cost accounting, and return on investment, are also supported by the Order. Additionally, the Order requires Federal agencies to have a program in place to periodically audit facilities' compliance with environmental regulations. Findings from those audits are to be included in the budget and planning activities of the agency to ensure that non-compliance is adequately addressed.

The Bush Administration is working to significantly increase the Federal government's use of EMS as a planning and implementation tool to help Federal agencies better carry out their mission and be good environmental stewards. EMS will help to equip agencies with the information, resources, strategy, and feedback they need to ensure they are continuously improving their performance and reducing their environmental impacts. On April 1, 2002, James L. Connaughton, Chairman of the White House Council on Environmental Quality (CEQ), and Mitchell E. Daniels, Jr., Director of the Office of Management and Budget (OMB), sent a letter to the heads of all Federal agencies emphasizing the importance of developing EMS as key tools to meeting the President's management and stewardship agendas.

On June 27, 2002, OMB issued guidance in its Circular No. A-11 to Federal agencies regarding preparation and submission of their FY 2004 budgets. OMB Circular No. A-11 is considered an indicator of planning priorities in the Administration's annual budget. This year's guidance included a new statement in section 31, Compliance With Administration Policies and Other General Requirements, supporting the use of EMS by all Federal agencies. The guidance reads: "Federal agencies should develop and implement environmental management systems in order to integrate environmental accountability into agency day-to-day decision-making and long-term planning processes across all agency missions, activities and functions. These efforts must be funded within guidance totals. They should include, but not be limited to, the following components: initial self-assessments, development of performance measures, policy, and establishment of management systems."

Executive Order 13148 also calls for further improvement in the Toxics Release Inventory (TRI) reduction success achieved under a previous Order. TRI is a publicly available database maintained by the Environmental Protection Agency (EPA) that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as Federal facilities. The E.O. requires a 40 percent reduction in toxics releases by December 31, 2006, from a baseline year of 2001.

ACCOMPLISHMENTS

Environmental Management Systems. In FY 2001, 15 Federal agencies, including several services and bureaus, conducted a first-ever EMS "gap analysis" of their agencies' existing environmental management systems. Although results of the analysis differed by agency, issues such as management support for agency environmental programs and environmental training were reviewed in detail to determine both strengths and areas for improvement. Many agencies are now using their analyses to better support EMS implementation at their facilities.

Today, more than 180 Federal facilities already developed and are implementing EMSs: almost 20 are formally registered as complying with the International Organization for Standardization (ISO) 14001 EMS standard, and over 160 others are either self-declared as conforming to an accepted EMS framework, are in EPA's formal EMS recognition system, or are otherwise identified as actively implementing an EMS. Hundreds of other facilities are beginning the education process critical to ensuring commitment to an EMS.

Fort Lewis, Washington, is the first Army installation to strategically enhance its existing programs through the implementation of an internationally certified systems approach to environmental management. As of September 2000, Ft. Lewis obtained ISO 14001 EMS registration for its Department of Public Works. Fort Lewis has noted a number of benefits as a result of its EMS, including improvements in effectiveness and efficiency, cost savings and avoidance of more than \$1 million, reduction in greenhouse gas emissions of 78 tons, and elimination of the use of 89 tons of hazardous chemicals.

In August 2000, the U.S. Coast Guard Yard, Baltimore, Maryland (Department of Transportation), was the first shipyard, public or private, in the U.S. to obtain ISO 14001 EMS registration. Under their ISO 14001 EMS, the industrial and environmental teams worked together and found a new paint system that cut the Yard's use of n-butyl alcohol by 80 percent, to less than 2,000 pounds. Changing operations to adhere to the ISO standard also yielded greater productivity and employee safety. The Yard now uses hydro-blasting instead of abrasive grit blasting for paint removal. This eliminates airborne contaminants, allows workers to filter wastewater and process the paint chips for removal, and saves time by eliminating the need for grit and dust cleanup.



The Tennessee Valley Authority (TVA) updated its EMS to factor environmental considerations into every business decision and allow performance tracking. TVA expects increased conservation of materials and energy, better management of environmental protection, and an overall reduction in costs.

Five Federal agencies have explicit policies which require implementation of EMS at their facilities. Several other agencies express their agency EMS policies in directives or manuals for field level implementation. Many of the remaining agencies have drafted agency policies and expect to have them signed by senior management in the near future.

Several Federal agencies' experience to date is that EMS concepts, such as life-cycle costing and pollution prevention, can yield many positive results, including significant savings. Federal agencies that track the benefits of their environmental programs found them to be cost effective.

For example, DOE's pollution prevention program has documented average savings and cost avoidance of more than \$100 million per year over a five-year span. DOE estimated life-cycle savings from 1994 to 1998 of \$311 million as a result of 262 projects with implementation costs of \$19 million.

The Department of Defense (DOD) calculates that it achieved an estimated 52 percent return on investment (ROI) from its pollution prevention program between FY 1996 and FY 2001. This ROI is based only on reduced environmental compliance costs. Returns are likely to be much larger because most pollution prevention investments have benefits outside of the environmental compliance budget. Pollution prevention investments have non-monetary benefits -- improved health, environmental protection, and quality of life. Much of the return on investment from pollution prevention is reduced supply, logistics, maintenance, and operational costs, which are not accounted for in the environmental compliance budget.



In an equally important accounting effort, some agencies are developing sophisticated, web-based systems to better track and manage facility assets. These systems will provide vital information for identifying and responding to environmental aspects identified as part of a facility's EMS. Additionally, with the assistance of OMB, Federal agencies are working to fully incorporate environmental considerations and EMS benefits into their budget and planning documents.

For example, in order to monitor compliance with environmental regulations at its 865 field facilities, the U.S. Fish and Wildlife Service (FWS) utilizes an interactive, computer-based compliance tracking program. The Service uses the program to track findings of non-compliance, determine the status of the facility's response, send e-mail prompts, create monthly status reports for Headquarters, identify the most common findings, and develop protocols to prevent future non-compliance.

All Federal agencies now have some type of audit program to assess their facilities' compliance with environmental regulations. Those with mature programs are seeking ways to enhance program and facility performance using EMS concepts. A number of agencies have coordinated their efforts and developed compliance audit protocols for use at a broad range of Federal facilities.

Toxic Chemical Pollution Reductions. In baseline year 1994, 178 Federal facilities reported releases and off-site transfers of toxic chemicals of over 14 million pounds. Using the 312 baseline chemicals, that figure was reduced by more than 50 percent by 1998. For calendar year 2000, due to the reporting of new activities and over 700 chemicals, 125 Federal facilities reported releases and off-site transfers totaling approximately 82 million pounds. Executive Order 13148 requires Federal agencies to reduce TRI reported releases and off-site transfers by 40 percent by December, 2006, using the calendar year 2001 data as a baseline. Using the information available for calendar year 2000, nearly 33 million pounds of toxic chemical pollutants are estimated to be reduced by 2006.

WASTE PREVENTION AND RECYCLING

Major Goals under E.O. 13101

- *Incorporate recycling and waste prevention practices in Federal agencies' daily operations.*
- *Meet 35 percent waste diversion rate by 2005.*
- *Develop government-wide strategies to further implement recycling and waste prevention practices.*
- *Test and evaluate EPA's environmentally preferable purchasing principles and concepts through pilot projects.*

The Federal government is committed to preventing pollution, reusing items where possible, and recycling what cannot be reduced or reused. Practically every Federal government office has a recycling program in place to collect items such as aluminum cans, glass bottles, and office paper. Other items, such as electronic equipment, motor oil, and construction debris, are routinely part of the recycling efforts at many Federal facilities.

POLICIES

Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, strengthens and expands the Federal government's commitment to recycling and waste prevention. The Pollution Prevention Act of 1990 established a national policy to prefer pollution prevention, whenever feasible. Pollution that cannot be prevented should be recycled; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner. Disposal should be employed only as a last resort.

In 1999, the first government-wide Strategic Plan for waste prevention, recycling, and Federal acquisition was issued. The Plan defined E.O. 13101 goals and provided a road map to achieve these goals. One of the unique aspects of the Plan was the establishment of a new and aggressive national recycling goal for the Federal government of 35 percent waste diversion by 2005.

E.O. 13101 also expanded the perspective of waste prevention by promoting the increased use of environmentally preferable products. The Environmentally Preferable Purchasing (EPP) Program promotes Federal government use of products and services that have reduced impacts on human health and the environment. The goal of the program is to make environmental performance a factor in Federal government purchasing decisions, along with product performance and cost.

ACCOMPLISHMENTS

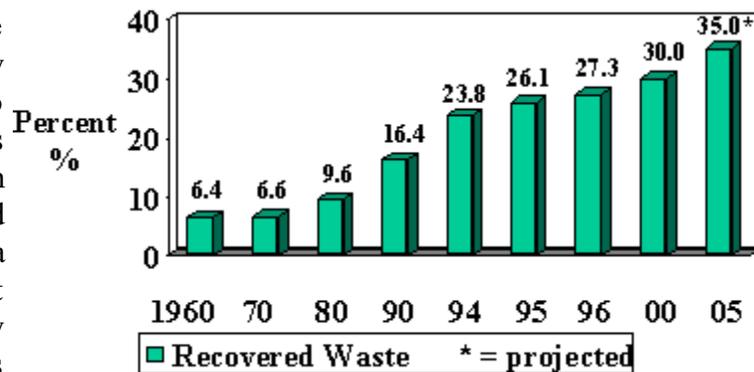
The national percentage of municipal solid waste recovered increased to 30 percent in the year 2000 and is on track to meet the EPA's national solid waste recycling goal of 35 percent by 2005. Federal agencies also continue their efforts to meet this waste diversion goal by putting in place aggressive recycling and waste prevention programs. Data reported by the six largest procurement agencies - currently DOD, DOE, National Aeronautics and Space Administration (NASA),

General Services Administration (GSA), Department of Veterans Affairs (VA), and the Department of Health and Human Services (HHS) - indicate that almost 90 percent of the offices in these agencies had recycling programs in place during 2001. Diversion rates for the six largest procurement agencies varies from 10 to 50 percent. Both DOD and DOE exceeded the 35 percent national goal in FY 2001, reaching 36 percent and 54 percent, respectively. Both agencies include construction and demolition debris in their recycling program.

The Naval Air Station on Whidbey Island, Washington, is an example of the Federal agencies' aggressive recycling and waste prevention efforts. The Station has developed a model recycling program for paper, glass, plastics and other common recyclables, boosting its recycling rates from 4 percent a decade ago to 64 percent in 2001. The recent construction of a composting facility allows Navy Whidbey to compost waxed corrugated boxes, shredded paper, and consumer food scraps, helping to save thousands of dollars annually in disposal costs. At this rate, the composting facility is expected to increase the waste diversion efforts on the island to more than 75 percent.

The New Melones Lake National Park, in Sonora, California, has reduced solid waste generation by 40 percent through the collection of corrugated boxes, aluminum, paper, and plastics. New recycling bins with high visibility signs were placed throughout the recreation areas, campgrounds, and Visitor Center. The local Boy Scouts also helped collect over 8,000 pounds of recycled aluminum cans, glass, and plastic bottles from the recreation areas during the summers of 2000 and 2001, raising over \$1,000 for their organization.

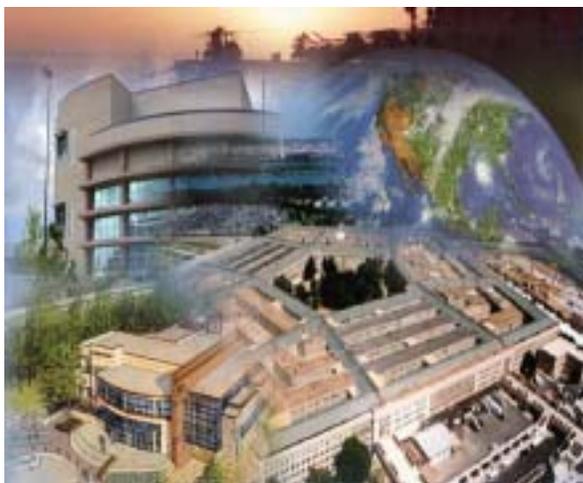
PERCENTAGE OF MUNICIPAL SOLID WASTE RECOVERED



GSA's Federal Recycling Program serves more than 650,000 Federal employees at 1,000 Federal agency locations across the country. In FY 2000, the program recycled 43,400 tons from the Federal office waste stream, an increase of nine percent over the previous year, and generated over \$900,000 of income. GSA sells these recycled materials where markets exist and returns the revenue to the agencies that generated the recyclables. Additionally, GSA realized approximately \$3.7 million in cost avoidance through the elimination of hauling and tipping fees (landfill charges) resulting in lower operating costs for the Federal government and ultimately savings to the taxpayer. Since the program's inception in 1990 to the year 2000, almost 400,000 tons have been recycled, \$6.2 million in income has been generated, and cost avoidance of almost \$26 million has been realized.

The Federal government's growing use of partnering options for the delivery of its programs and services is being successfully incorporated into its waste prevention and sustainable development efforts. These partnerships are designed to facilitate access to new recycling and waste prevention opportunities and enable use of new capabilities and technologies.

A partnership between the Federal Highway Administration (FHWA) and the Recycled Materials Resource Center at the University of New Hampshire provides research and information to reduce the institutional barriers that limit the use of recycled materials in road construction applications. The Center worked closely in partnership with FHWA, the Federal, state, private sector, and environmental and highway associations to increase use of recycled materials in roads, and recently completed research underlying a new national specification for using recycled glass for roadway base courses.



Another innovative partnering effort is the Federal Network for Sustainability (FNS), an alliance of 13 west coast Federal agencies, representing 160,000 Federal employees, who share staff, authorities, and experience to collectively reduce waste, pollution, and energy consumption. The principal goal of the FNS is to use the vast consumer power of the Federal government to promote sustainable practices. Its current efforts are focused on advancing the demand for greener copier paper; helping to influence the market for more sustainable electronic products; purchasing alternative and renewable energy; and implementing environmental management systems.

Another unique partnership is the Federal Electronic Stewardship Working Group (FESWG), which addresses the implementation of better life-cycle management practices for Federal electronic equipment, and the growth of the infrastructure necessary for the reuse and recycling of obsolete electronics. Partnering agencies – including CEQ, DOD, DOE, EPA, the Department of Interior (DOI), and the US Postal Service (USPS) – are working to develop a cohesive national strategy to increase demand for “greener” electronic products and address end-of-life management issues.



The National Parks Service recently established 20 parks as Centers for Environmental Innovation (CEI) to advance the concept of sustainability. These will be park areas where research, development, and appreciation of sustainable practices occur. The CEIs will focus on educating staff and working with park partners to help green our national parks by increasing the use of environmentally preferable products. EPA will work directly with these parks to identify the types of products and services that will improve parks' resource stewardship capacity.

EPA, GSA, and the Society of Government Meeting Professionals have been collaborating to "green" government meetings by reducing pollution, energy use, and water use at conferences. An interactive, web-based tool (<http://www.bluegreenmeetings.org>), was developed to help meeting planners plan "greener" meetings and help meeting service suppliers "green" their services.

The EPP Program and DOI have joined forces with the Javits-Wagner-O'Day (JWOD) program to promote purchasing that not only greens the procurement process across the Federal government, but also promotes employment opportunities for individuals who are blind or severely disabled. The partnering effort allows DOI to promote the purchase of environmentally preferable products and services, JWOD Committee to increase efforts to incorporate environmental considerations into the products and services they manufacture and provide, and EPA to assist the organizations in greening their products by preparing a "Green Product Development" guide and by providing training.

MARKET DEVELOPMENT THROUGH ACQUISITION

Market Development Goals Under Energy and Environmental E.O.s

- *Protect the environment and promote economic growth through the purchase of recycled content products, environmentally preferable products and services, biobased products, energy efficient products and services, and the use of alternative fuels and ozone-friendly substances.*
- *Develop and implement Federal agency programs to increase and expand markets for recovered materials, energy efficient, biobased, renewable, and environmentally preferable products and services.*

The U.S. government is the single largest consumer in the nation. It can help conserve our precious resources by using its \$240 billion purchasing power, and an additional \$200 billion in grant allocations, to develop and enhance markets that support environmentally preferable and energy efficient practices. By giving full weight to environmental and energy factors in its purchasing decisions, the government can significantly influence its suppliers, their product design, and pricing policies, as well as purchasing practices of its grant recipients. As one of the largest purchasers of goods and services in the world, the U.S. government can set a positive example by reducing unnecessary waste and toxicity, conserving energy, using renewable energy, recycling, and buying recycled content, energy efficient, and biobased products.

POLICIES

Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, strengthens Federal mandates to protect the environment and promote economic growth through the purchase of recycled content, biobased, and environmentally preferable products. Section 6002 of the Resource Conservation and Recovery Act (RCRA) and E.O. 13101 require Federal agencies to give preference in their procurement and grant programs to the purchase of specific recycled content products identified in EPA's Comprehensive Procurement Guidelines (CPG). Agencies are required to prepare affirmative procurement plans for purchasing the EPA designated items. In the guidelines, EPA designates products that are or can be made with recovered materials and also recommends purchasing practices for Federal agencies, such as minimum recycled content standards.

Federal market development efforts also have expanded into other environmental stewardship areas, including energy management. The Federal government's purchasing power can have a tremendous impact because it spends more than \$10 billion each year on products that use energy. According to an August 2000 report by Lawrence Berkeley National Laboratory, the Federal government could

save about \$220 million in annual energy costs by 2010 just by buying energy efficient products that are readily available. This report estimates that approximately 15 trillion Btu (or one tenth of the government's 35 percent energy reduction goal) could be saved annually through the purchase of energy efficient products. Smarter energy-related procurement practices will not only reduce energy costs, but will expand the market for energy efficient products, create a strong "market pull" for new technologies, and set a clear example for other government and corporate purchasers.

Recognizing the government's ability to lead by example and stimulate the development of energy efficient products, President Bush signed E.O. 13221, *Energy-Efficient Standby Power Devices*, on July 31, 2001, directing Federal agencies to purchase products that use minimal standby power when possible. E.O. 13123, *Greening the Government Through Efficient Energy Management*, requires Federal agencies to select, where life-cycle cost effective, ENERGY STAR® and other energy efficient products when acquiring energy-using products. For product groups where ENERGY STAR® labels are not yet available, agencies shall select products that are in the upper 25 percent of energy efficiency as designated by DOE's Federal Energy Management Program (FEMP).

E.O. 13134, *Developing and Promoting Biobased Products and Energy*, expands Federal procurement activities and requirements related to biobased products and services. Biobased products are made from renewable agricultural, animal, or forestry materials -- such as vegetable-based lubricants, biofuels, compost, and biobased construction materials. The E.O. set a goal of tripling the U.S. use of bioenergy and bioproducts by 2010. This goal has the potential of generating new high-tech jobs, new economic opportunities, stronger income for farmers, and redevelopment in many rural communities. E.O. 13134 also established an Interagency Council on Biobased Products and Bioenergy, co-chaired by the Secretary of Agriculture and the Secretary of Energy, to assist in bringing biobased products and bioenergy into common use across the government. Parts of this E.O. were superseded by the *Biomass Research and Development Act of 2000*, PL 106-224. The Act replaced the Interagency Council created under E.O. 13134 by a Biomass Board of Federal officials, chaired by USDA and DOE, to coordinate and accelerate all Federal biobased products and bioenergy research and development. It also put in place a Federal Advisory Committee responsible for providing guidance to the Board on the technical focus of the initiative.

On May 13, 2002, President Bush signed into law the "*Farm Security and Rural Investment Act of 2002*," Public Law 107-171. This is the first farm legislation containing a separate title devoted to energy, Title IX, which creates a Federal government preferential purchasing program for biobased products in order to help promote emerging markets for these products. The title includes a voluntary biobased product labeling program and affirmative procurement program for biobased products. The law also includes provisions to promote renewable energy.

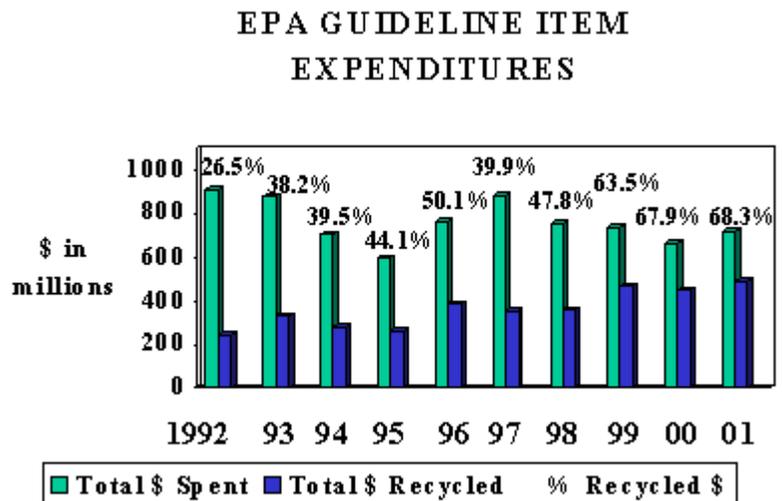
In addition to these efforts that encourage the Federal government to push forward markets with targeted procurement efforts, President Bush also issued two Executive Orders directing Federal agencies to assist in enhancing the nation's energy supply. Issued on May 18, 2001, E.O. 13211, *Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*, directs the government to appropriately weigh and consider the effects of Federal regulations on the supply, distribution, and use of energy. In order to provide more useful energy-related information

and improve the quality of agency decision making, Federal agencies are now required to prepare a Statement of Energy Effects when undertaking certain actions that may affect energy supply, distribution, or use.

Also issued on May 18, 2001, E.O. 13212, *Actions To Expedite Energy-Related Projects*, directs Federal agencies to take appropriate actions to promote projects that will increase the production, transmission, or conservation of energy and increase its supply and availability to the Nation. This E.O. established an interagency Task Force, chaired by CEQ, to monitor and assist the agencies in efforts to expedite their review of permits or similar actions, as necessary, to accelerate the completion of energy-related projects, increase energy production and conservation, and improve transmission of energy. The Task Force will issue a report on its progress by 2003.

ACCOMPLISHMENTS

Recycled Content Products. More than a decade ago, EPA issued the first set of guidelines for the Federal government to procure five specific items containing recovered materials: retread tires, paper and paper products, re-refined lubricating oil, cement and concrete containing fly ash, and building insulation. The EPA list now contains 54 designated products. All “major procuring agencies” -- that is any Executive agency that procures more than \$50 million worth of goods and services per year -- are required to establish Affirmative Procurement Programs (APPs) and buy these EPA-designated products. In 2001, EPA proposed for public comment the designation of an additional 11 items in 5 different CPG product categories. This list of additional items is expected to be finalized by early 2003.



The largest Federal procuring agencies (currently DOD, DOE, NASA, GSA, VA, and HHS) account for more than 85 percent of annual Federal expenditures. Over a ten-year span (1992 to 2001), the six largest procuring agencies plus USPS spent a total of \$3.6 billion on EPA-designated recycled content products.

As depicted in the chart above, purchases of recycled content products have steadily increased over the last decade. In FY 2001, the largest procuring agencies plus the USPS reported spending over \$717 million on EPA-designated products, with and without recycled content. The amount spent on recycled content CPG items in FY 2001 was over \$490 million, or 68.3% of the purchases of those items. Actual expenditures may be much higher but cannot be accurately reported due to the limitations in automated Federal data procurement systems. The Federal government is working to improve how it tracks and reports the purchases of such products.

In June 2001, the General Accounting Office (GAO) completed a review of the status of Federal agencies' efforts to implement the RCRA section 6002 buy-recycled requirements and to purchase environmentally preferable products. GAO examined agency implementation of RCRA section 6002 through direct purchases, acquisitions through contractors, and acquisitions by state and local recipients of Federal grant and assistance funds. GAO reported that it could not determine the extent to which the largest procuring agencies are purchasing the EPA-designated products because of the increasing use of the government purchase cards, the problems with tracking and reporting systems, and the lack of data from contractors and grantees regarding their acquisition and use of the EPA-designated products.

In FY 2000, Federal purchase card holders used 670,374 purchase cards to make 23.5 million transactions. One of the biggest challenges to increasing the Federal government's use of green products and services is to ensure that these card holders are given preference to recycled content, energy efficient, biobased and other environmentally preferable items when using their purchase cards. To help promote awareness in this area, many agencies now include "buy green" requirements in their purchase card training and guidance manuals. Reminder messages highlighting the importance of buying recycled content products have been added to card holders' monthly transaction reports and payroll stubs by the General Services Administration (GSA) and other agencies.

OMB's Office of Federal Procurement Policy (OFPP) and the White House Task Force on Waste Prevention and Recycling (Task Force) co-chair an inter-agency workgroup on reporting, which has recommended ideas for streamlining and simplifying future reporting and tracking. As a result of this workgroup's efforts, beginning in FY 2002, the data that agencies report to the Federal Procurement Data System (FPDS) includes information on the procurement of EPA-designated recycled content products in contracts larger than \$25,000. OFPP and the Task Force, as well as individual agencies, can use these data to audit program progress and report compliance to Congress. Agencies can also begin using the data to audit compliance at their facilities as OFPP guidance suggests. The OFPP guidance appears in the 2003 FPDS Reporting Manual, Appendix G, *Guidance on FPDS Coding for Purchasing EPA-Designated Products*.

In 2001, the Task Force worked with the Small Business Administration (SBA) to begin "greening" PRO-Net, SBA's electronic listing of small businesses. PRO-Net is used by Federal, state, and local agencies, contractors, and private-sector companies to identify SBA certified small businesses. Approximately 2,000 businesses edited their PRO-Net listings to identify themselves as sources of EPA-designated recycled content products. The Defense Logistics Agency (DLA) is now working with SBA to better identify companies that provide energy and water efficient products, and/or products emitting no or low volatile organic compounds.

ENERGY STAR®. The ENERGY STAR® labeling program is a joint effort between EPA and DOE to encourage manufacturers (and some retailers) to identify energy efficient products with an easily recognizable logo, the ENERGY STAR®. Since this is a nationwide labeling program covering multiple products, it is very simple for commercial customers to identify the most efficient models among those offered – for instance, on a retail floor, or among various models listed in a product catalog. Presently, the program includes a wide variety of office equipment and home heating and

cooling products, as well as many consumer audio and video products (e.g., TVs, VCRs, and DVD players), appliances, and residential windows. Some commercial equipment is also covered, such as unitary (“rooftop”) air conditioners, exit signs, low-voltage distribution transformers, and roof products. The National Energy Plan recommended extending the ENERGY STAR® labeling program to additional products, appliances, and services; DOE and EPA are working to do that. Telephony, including cordless telephones and answering machines, is among the newest additions to the ENERGY STAR® family of products. The ENERGY STAR® program also applies to energy efficient buildings, and this is described in the next chapter.

DOE’s Federal Energy Management Program (FEMP) developed Product Energy Efficiency Recommendations that have been disseminated to approximately 5,000 Federal energy managers, procurement officials, and product specifiers. These recommendations identify the upper 25 percent efficiency level for 38 product types, provide information about additional purchasing criteria and considerations, and present cost-effectiveness examples. Federal purchasers can easily access information on these products via direct links between the ENERGY STAR® and FEMP web sites.

As directed by E.O. 13221, *Energy-Efficient Standby Power Devices*, FEMP, in collaboration with GSA, DLA, and the ENERGY STAR® program, developed a list of office, video, and audio products that use minimal standby power. FEMP has worked closely with all the leading office product and consumer electronic manufacturers to develop low standby power recommendations and influence the design of current and future products containing both internal and external standby power devices.

DOE estimates that the Federal government will save an estimated \$25 million in energy costs over the next six years from this program, which is enough electricity to power about 40,000 homes for one year. The President's initiative has spurred major manufacturers in the U.S. and around the world to begin significantly redesigning their products sold to the general public to reduce standby power. As a result, DOE estimates that U.S. consumers alone will save more than \$500 million in annual energy costs over the next six years, which is enough energy to power approximately 630,000 homes for one year.

As an example of E.O. 13221's impact, Dell Computer has now committed to designing its mainstream desktop computers to consume less than 1 watt in standby power -- a feature that will not only save energy for the Federal government but will benefit all consumers. Additional low standby power products will be added on an ongoing basis. Manufacturers and government purchasers can submit and view the most up-to-date information on devices with low standby power on FEMP’s Web site.

Renewable Energy. Agencies are also using their purchasing power to help create larger markets for renewable energy. In FY 2001, agencies reported purchasing almost 632 gigawatt hours of green power and thermal energy, enough renewable energy to service more than 60,000 average households for a year. Approximately 303 gigawatt hours of this total represents new renewable energy use as defined by Executive Order guidance, and therefore, can be credited toward the 2.5 percent renewable energy goal for 2005. In many cases, agencies have found innovative ways of applying their energy cost savings from efficiency improvements and competitive electricity contracts to pay for incremental cost of renewable energy purchases.

GSA, through its aggregate electricity procurements, has demonstrated its commitment to renewable power by contracting to purchase renewable power in Pennsylvania, New York, California, Texas, and Washington, DC. GSA's contracted renewable purchases will increase from 13.5 gigawatt hours in fiscal year 2002 to an estimated 32 gigawatt hours in fiscal year 2003.

In addition to buying renewable power from utilities, agencies are installing renewable technologies and generating power at their sites. For example, Federal agencies installed 3,151 solar energy systems by the end of 2001. E.O. 13123 sets a goal for the Federal government of installing 20,000 solar energy systems by 2010.



The Thoreau Center for Sustainability at the Presidio National Park is one of the first models for demonstrating the integration of photovoltaics (PV) into a Federal building. Laminated to the skylight glass are photovoltaic cells that produce electricity, as well as serve as an element in the shading and daylighting design. The electricity generated by this system is clean, quiet, and dependable. At peak capacity, this system can generate about 1.3 kW of electricity or approximately enough to operate 65 light fixtures

EPA, with assistance from GSA and DOE, has showed a continuing commitment to use of renewable energy. As of October 1, 2001, EPA had acquired renewable power for 5 of its 28 laboratories (Richmond, California; Chelmsford, Massachusetts; Golden, Colorado; Manchester, Washington; and Cincinnati, Ohio). These acquisitions represent approximately 16 percent of the agency's electric power purchases. EPA is currently working on renewable power acquisitions for its laboratories in Fort Meade, Maryland; Houston, Texas; Narragansett, Rhode Island; and Research Triangle Park, North Carolina. When completed, these nine procurements will represent approximately 33 percent of EPA's electric power purchases.

On April 22, 2002, Energy Secretary Abraham announced that DOE will purchase electricity generated from renewable resources to cover approximately 17 percent of its electricity needs at DOE Headquarters facilities in Washington, DC and Germantown, Maryland. The contract calls for an annual purchase of 6 million kilowatt hours, roughly the amount of electricity needed to power 600 homes each year.

On November 28, 2000, DOI and DOE co-hosted a conference titled "Opportunities to Expand Renewable Energy on Public Lands." The conference brought together government officials, renewable energy industry and environmental leaders, and other citizens to focus on the best ways to increase wind, solar, and geothermal production on public lands. A follow-up meeting was held in February, 2002, by the Bureau of Land Management (BLM) in Palm Springs, CA with representatives from the renewables industry. A draft report titled "Assessing the Potential for Renewable Energy on Federal Lands," was presented by BLM to the Western Governors Association

and released for public comment in May 2002. The report found that 64 BLM planning units in 11 western states have high potential for power production from one or more renewable energy sources. DOI currently leases, permits, and licenses most of the government's renewable energy. DOI land produces approximately 40 percent of the nation's geothermal energy.

Biobased Products. The 2002 Farm Bill requires the U.S. Department of Agriculture (USDA) to establish a biobased products designation purchasing program similar to RCRA 6002 requirements. Once USDA designates a biobased product, Federal agencies which purchase the product must give preference to the product containing the highest level of biobased content practicable, considering price, performance, and availability of the product. USDA is also required to develop a voluntary program for labeling “USDA Certified Biobased Products.” The program will identify and encourage the purchase of products containing the highest levels of biobased content practicable. USDA plans to propose the biobased products program and criteria for determining which products will receive the label.

In February 2002, several Federal agencies, assisted by DOE’s Argonne National Laboratory, began an interagency effort to increase the purchase and use of biobased products in the government. Under the new *Buy Bio Program* initiative, Federal agencies are working in partnership to develop strategies to leverage the purchasing power of the Federal government to promote the preferential procurement of biobased products and bioenergy. The group is working to provide education, outreach, communication, and training in order to advance markets for biobased products nationwide.



FAR Revisions. In June 2000, the Federal Acquisition Regulation (FAR) was revised to expand the provisions governing purchasing of recycled content, energy efficient, and environmentally preferable products and services. These revisions strengthen and institutionalize the concept of buying such products and services – from initial acquisition planning and project design through contractor selection, project management, and contract administration.

In December 2001, Subpart 23.2 of the FAR was revised to require the purchase of energy-efficient products if they are life-cycle cost effective and available. When acquiring energy-using products, contracting officers must purchase ENERGY STAR® or other energy efficient FEMP-designated products. In addition, when contracting for services that will include the provision for energy using products, including contracts for design, construction, renovation, or maintenance of a public building, the specification must require that the contractor provide ENERGY STAR® or other energy efficient products. Changes to the FAR that incorporate E.O. 13221, *Energy-Efficient Standby Power Devices*, requirements for low standby power were published in the *Federal Register* as a proposed rule on October 16, 2002.

ENERGY EFFICIENCY, RENEWABLE ENERGY, AND SUSTAINABLE BUILDINGS

Major Energy and Water Conservation Goals under E.O. 13123

- *Reduce building energy use per square foot by 20 percent by 2000, by 30 percent by 2005, and by 35 percent by 2010, compared to 1985.*
- *Reduce energy consumption of industrial and lab facilities by 20 percent by 2005 and by 25 percent by 2010, relative to 1990.*
- *Meet ENERGY STAR® building criteria to the maximum extent possible.*
- *Use renewable energy sources to generate the equivalent of 2.5 percent of facility electricity consumption by 2005.*
- *Implement best management practices for water efficiency in 80 percent of Federal facilities by 2010.*

As the Nation's single largest energy consumer, the Federal government can lead the nation in becoming a cleaner, more efficient energy consumer. In 2001, the Federal government spent nearly \$9.6 billion to provide energy to its buildings, vehicles, and operations. Over 40 percent of the government's energy bill is spent on heating, cooling, and powering its 500,000 buildings. Legislation dating back to 1975, as well as recent Executive Orders, recognize that numerous opportunities exist for improved energy management within the Federal government. Efforts to improve energy management in the Federal sector will also help to expand markets for renewable technologies, reduce air pollution, and serve as powerful examples to American businesses and consumers.

POLICIES

The Energy Policy Act of 1992 (EPACT) directed Federal agencies to reduce building energy use by 20 percent by 2000 compared to the 1985 base year. To help agencies achieve this goal, EPACT provided alternative financing tools for agencies to implement energy savings projects with private sector funding. Executive Order 13123 expanded Federal energy management goals and opportunities. The Order directs Federal agencies to reduce their energy intensity by 35 percent by 2010. As directed by E.O. 13123, DOE established new Federal government goals for renewable energy and water conservation.

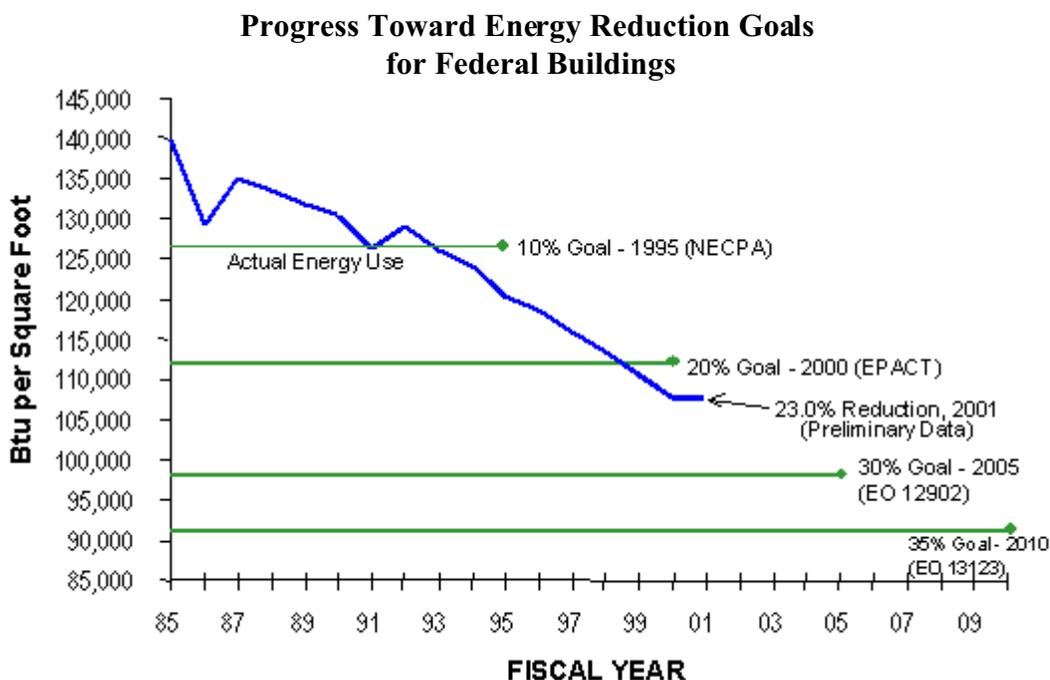
To implement E.O. 13123, DOE, working in consultation with member agencies of the Interagency Federal Energy Management Task Force, has issued several documents, including guidance that established water conservation and renewable energy goals.

President Bush’s National Energy Policy (NEP) recognizes enormous opportunities for the Federal government to save energy and enhance its environmental performance. Given the NEP’s call for diversification of the nation’s energy resources and enhanced use of renewable energy and combined heat and power, the Federal government has a clear mandate to lead by example with smart energy management, including energy retrofits in existing buildings, incorporating energy considerations in the design of new facilities, procurement of energy efficient and renewable energy products, improved operations and maintenance, and more effective utility load management.

In July 2001, with the issuance of E.O. 13221, *Energy-Efficient Standby Power Devices*, President Bush called for further Federal leadership in energy management. E.O. 13221 directed Federal agencies to purchase products that use minimal standby power when possible. Standby power is the electricity used by many office and consumer products (e.g., computers, appliances, televisions, video cassette recorders, etc.) when they are turned off. For more information on how the Federal government is leading by example by purchasing renewable energy and energy efficient equipment, including low standby power products, see the chapter entitled, “Market Development Through Acquisition.”

ACCOMPLISHMENTS

Agencies have made significant progress in their energy management efforts, in particular in the area of energy efficiency. FY 2001 agency energy data indicate the Federal government has reduced its energy intensity (BTUs per square foot) in standard buildings (such as office buildings, warehouses, schools, etc.) by 23 percent compared to the 1985 baseline, surpassing the EPACT goal of 20 percent. Total carbon emissions from energy used in Federal facilities declined 19.4 percent from 14.4 million metric tons of carbon equivalent (MMTCE) in FY 1990 to 11.6 MMTCE in FY 2001.



This reduction of 2.8 million MMTCE is equal to removing almost 2.1 million cars (or almost 1.7 million sport utility vehicles) from the road in a year.

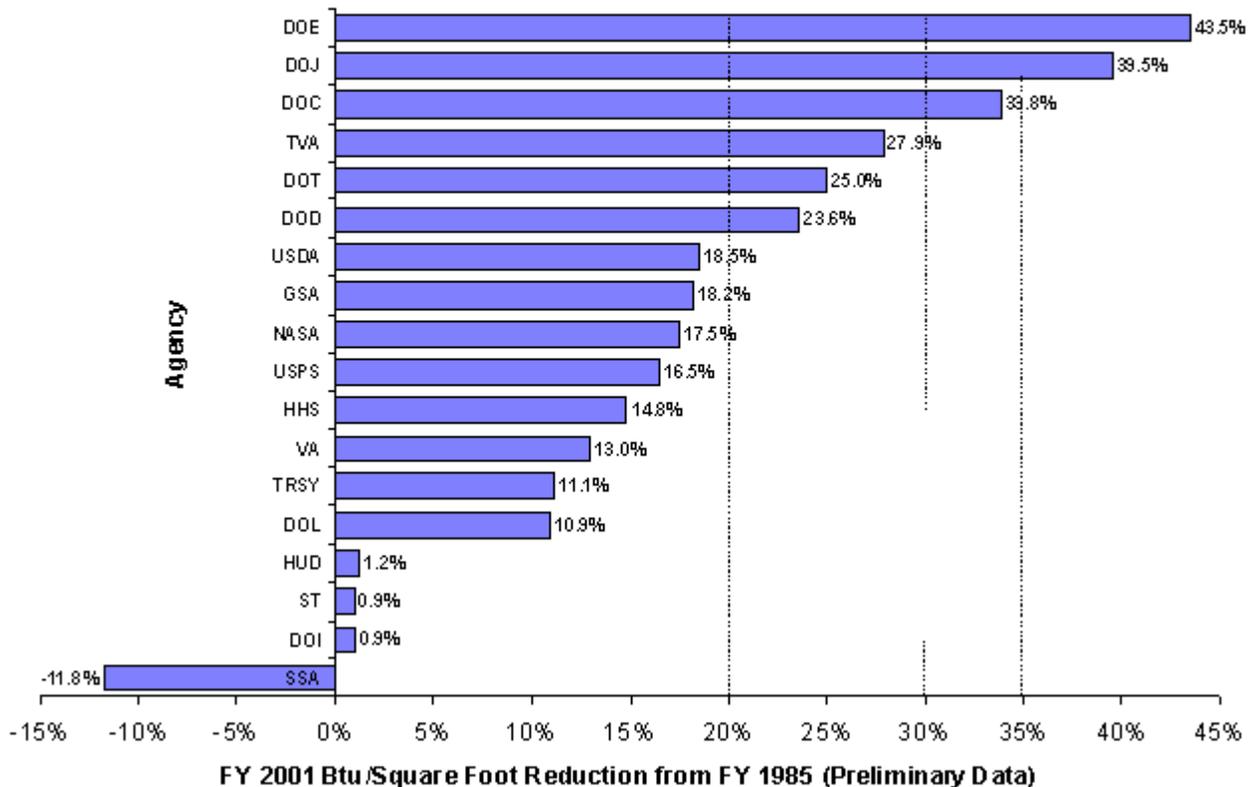
In FY 2001, the Federal government lowered its utility bill 26.4 percent, from \$5.3 billion in 1985 (in 2001 constant dollars) to \$3.9 billion. More than half of this \$1.4 billion savings is attributable to energy management activities by the agencies, with the remaining savings resulting from changes in building stock, fuel mix and prices, and other variables.

FY 2001 Energy Scorecards. Agencies documented their progress in meeting the E.O. 13123 requirements on scorecards submitted to OMB in January 2001 and 2002 and in mandated annual reports to DOE. The most relevant findings include:

- In FY 2001, agencies invested more than \$130 million of direct expenditures in energy efficiency, renewable energy, and water conservation projects. Estimated life-cycle cost savings from this investment are approximately \$400 million.
- In FY 2001, agencies implemented 125 energy projects using alternative financing mechanisms with a total private sector investment of approximately \$477 million. Total life-cycle cost savings from this investment are approximately \$1.2 billion, approximately \$400 million of which will be retained by the government.
- More than 13 percent of Federal facility space (approximately 450 million square feet) was audited during FY 2001 to identify energy-saving opportunities.
- In FY 2001, ten agencies purchased a total of 632 gigawatt hours of electricity and thermal energy generated from renewable resources, more than three times the amount reported in FY 2000.
- Eleven agencies implemented renewable energy projects during FY 2001, including 60 solar projects, seven wind projects, and nine geothermal projects.

The chart below shows the reductions in energy intensity made in standard buildings between the FY 1985 base year and FY 2001 by the 18 largest energy-consuming Federal agencies. Six of these agencies are on-track to meet the 35 percent reduction goal in 2010. Another third are moving in the right direction and have the potential to meet the goal by aggressively applying the principles of smart energy management.

Individual Agency Progress Toward Energy Reduction Goals for Standard Buildings



Each year, outstanding agency energy management efforts are recognized through a variety of award programs. In October 2001, Vice President Cheney presented the Presidential Awards for Leadership in Federal Energy Management to four Federal agency energy management teams. Nearly 50 employees were acknowledged for their leadership in promoting and improving Federal energy management at their agencies and facilities. The agencies recognized for their award-winning programs were:

- NASA: “Federal Energy Management Success.” For their outstanding efforts in using alternative financing, and evaluating renewable energy and water conservation measures.
- USPS - Southeast Area: “Stamp Out Energy Waste.” For implementing a Strategic Energy Management Plan which saved significant amounts of both energy and financial resources.
- DOD, U.S. Marine Corps Air Station – Iwakuni, Japan: “Energy Conservation Program 2000.” For assembling an Energy Conservation Planning Group which lowered billing rates, reduced metered energy consumption, and elevated energy conservation awareness of all Station residents.

- DOD, Department of the Navy - Southwest Region: “Demand-Side Management.” For forming a Regional Energy Program Office (REPO) in Southern California that helped the local utility avert Stage 3 alerts and regional rolling outages.

Alternative Financing Tools for Energy and Water Improvements. Agencies are increasingly using alternative financing mechanisms, including energy savings performance contracts (ESPC) and utility energy service contracts (UESC), to implement energy efficiency and renewable energy improvements. With these innovative tools, agencies can use private financing to pay for energy and water improvements and then pay back the energy service company or utility through utility bill savings in the future. From FY 1988 through FY 2001, private sector companies invested almost \$1.7 billion in Federal facilities, making these facilities more energy efficient at no net cost to taxpayers. Estimated savings from these privately-financed projects contributed approximately 15 percent to the reductions seen in standard building energy use since 1985.

In addition to ESPC and UESC contracts, DOE offers technology-specific ESPCs to help agencies implement featured technologies, including geothermal heat pumps, solar hot water, and biomass technologies. DOE’s Federal Energy Management Program, the Army Corps of Engineers, the Air Force, and GSA’s Energy Center of Expertise assist agencies in using these tools.

High Performance Buildings. E.O. 13123 directs Federal agencies to apply the principles of sustainable design to the siting, design, and construction of new facilities. These principles include energy efficiency, reduced consumption of land and other non-renewable resources, minimization of waste materials and water use, and creation of a livable, healthy, and productive work environment. As addressed in E.O. 13101, sustainable design also incorporates a wide range of recycled content, energy and water efficient, and environmentally preferable materials, helping to promote markets for these products.

A total of 116 Federal buildings have earned the ENERGY STAR® building label. In FY 2001, FEMP awarded the first "Energy Star Building Award for Superior Performance" to GSA for eight Federal buildings that were among the top five percent nationwide in energy performance. President Bush’s National Energy Policy recommended expanding the ENERGY STAR® program beyond office buildings to include schools, retail buildings, health care facilities, and homes. A number of these building types, like schools and new homes, are now included in the program. As additional building types are covered in the program, a greater number of Federal facilities can assess whether they meet the ENERGY STAR® specifications.

The Whole Building Design Guide (WBDG) is a complete Internet resource that includes a wide range of building-related design guidance, criteria, and technology for incorporating sustainable building design principles in design decisions. The WBDG is up-to-date, knowledge-based, and creatively linked to information across disciplines and traditional professional boundaries. It is intended to encourage the “whole building approach” to design and construction and is used by Federal, military, and private sector architects, engineers, and project managers. Several agencies have implemented elements of the WBDG principles into their facility design standards and master planning process.

Federal agencies also use the U.S. Green Building Council's (USGBC) Leadership in Energy and Environment Design (LEED) program. LEED is a comprehensive system for designing and constructing sustainable buildings. LEED integrates today's accepted building practices with newly emerging energy and environmental information. The certification process helps participants maximize building efficiencies and achieve optimal economic and environmental performance. In addition, LEED encourages creative use of the building site and materials and sensitivity to the natural environment in landscaping, recycling efforts, and more.

At present, 50 Federal buildings have declared their intent to seek LEED Certification by registering with the USGBC. Both GSA and the U.S. Naval Facilities Command have set policies that require all future design projects to at least meet the equivalent of LEED certification (with GSA seeking at least "Silver" level). LEED standards are currently available for new construction and renovation projects (LEED 2.0/2.1), existing building operations (LEED-EB, Pilot version), and commercial interiors projects (LEED-CI, Pilot version).



Labs and other high-tech buildings may present the greatest challenge for delivering energy efficient and environmentally responsible buildings. By the very nature of the work done in these buildings, the need for diversity, flexibility, safety and many other concerns must be balanced with Federal environmental and energy objectives. This dictates engineering and architectural solutions beyond those typically confronted in more typical buildings such as offices, classrooms, and warehouses.

To address this unique challenge, EPA and DOE co-sponsor the Laboratories for the 21st Century program. In this program, EPA and DOE partner with private and Federal sector laboratory owners to better understand and assist in the partner's efforts to plan, budget, design and engineer their laboratory. The program also is developing guidelines and a variety of technical tools, offering workshops, sponsoring annual conferences on the design and engineering of high performance laboratories, clean-rooms and data centers.

The Alfred A. Arraj U.S. Courthouse in Denver, Colorado, was developed as a showcase green courthouse, demonstrating GSA's commitment to sustainable design. Dedicated in October 2002, the courthouse measuring 346,000 square feet is expected to consume about 43% less energy than a baseline building using minimum requirements of the Federal Energy Code. A high-performance curtain wall system provides natural lighting for adjacent courtroom and conference areas, maximum reduction of lighting loads during daylight hours, and a strong sense of connection to the outdoors. Displacement ventilation in the courtrooms features low-velocity air introduced at the floor level to efficiently condition the space and remove indoor air pollutants. Energy-efficient lighting, an evaporative cooling system, variable-speed air handling fans, photovoltaic panels, and other sustainable design features, together provide a healthful, productive, high-performance work environment.

EPA's efforts in promoting sustainable buildings are widely recognized for their use of recycled content materials, daylighting, energy efficient lighting and mechanical systems, water conserving plumbing fixtures, indoor air quality measures, and sustainable material selections. Some examples of these features include: the Chelmsford, MA laboratory's prototype motorized photovoltaic (PV) solar shade/light shelves; the Kansas City Lab's roofrainwater recapture system (the captured water is used to flush the toilets); and the Research Triangle Park facility's 75 kilowatt PV array.

The \$1.1 billion renovation of the Pentagon is also being performed in an environmentally sensitive manner. Reducing building energy use is being emphasized, as is incorporating environmentally sensitive materials – those that require the least energy to produce, are made from renewable resources, minimize air and water pollution during manufacture, and have a recycling value at the end of their life. On September 11, 2001, American Airlines Flight 77 crashed directly into the renovated section of the Pentagon, just five days before its completion. The capabilities of the building's new energy management control system and energy efficient windows, both implemented as part of the massive building renovation, proved invaluable for containing the effects of the attack. Facility managers were able to shut down air handlers immediately, preventing personnel from entering a life-threatening situation where they could be exposed to toxic conditions. Pressurized air barriers were set up to prevent fumes from migrating into occupied areas. In addition to the energy management control system, the Pentagon's new windows also helped to contain damage from the attack. The windows, designed to be shatterproof and permanently closed, had been installed for security reasons and for their energy efficiency benefits. Pentagon officials reported that the new windows near the impact site remained intact after the plane struck, whereas the older windows, in the unrenovated areas up to 200 feet away, blew out during the initial impact and explosion of jet fuel.

In another example of a sustainable, high-performance building, NASA's Space Experiment Research and Processing Laboratory at Kennedy Space Center will incorporate a central light well to bring natural light into the open plan office space, high efficiency lighting with occupancy sensors, variable frequency drives on air handlers and other HVAC components, high efficiency chillers and passive solar thermal mass principles. It also features an innovative passive storm water retention area, 100 percent native plants with low water requirements, and low volatile organic compound paints and coatings.



EPA's new Research Triangle Park, North Carolina facility, dedicated May 29, 2002, represents one of the largest green buildings ever completed. A compact building footprint, bio retention areas to manage storm water, extensive recycling during the construction period, construction materials with recycled content, and numerous indoor air quality initiatives all serve to reduce the environmental impact of this 1.1 million square foot facility. Siting of the building took advantage of natural contours, reducing the need for grading and limiting disruption to existing woodlands and wetlands. Surface paving was minimized, and native plantings were retained to allow all stormwater runoff to

be treated naturally before flowing into local streams. The innovative design for the atrium makes use of natural light and connects different sections of the building, conserving energy and reducing the amount of material that would otherwise be needed for exterior walls. Other benefits include: recycling of 80 percent of the construction waste diverted more than 8,000 tons of material from being sent to local landfills; on-site burning of waste was prohibited to protect the air; and an on-site system for concrete production kept 75,000 miles of truck traffic off local roads, saving 10,000 gallons of fuel, cutting air emissions, and reducing project costs.

Distributed Energy and Load Management. On May 3, 2001, in an effort to prevent outages in power-constrained areas, President Bush issued a directive to Federal agencies to take appropriate actions to conserve energy use at Federal facilities, particularly during peak hours. Recognizing the Federal government's ability to manage its electrical load requirements, the directive required agencies to report on their energy conservation actions within 30 days. The Secretary of Energy summarized agency progress in a June 2001 report to the President titled, "Energy Conservation Actions Taken at Federal Government Facilities." The report noted that Federal agencies updated their energy management plans to address peak load reduction and took various measures to reduce electrical demand. In response to the President's call for action, Federal agencies in California reduced their peak demand by 10 percent in August 2001 alone.

In another effort to reduce strains on the electrical grid and also improve efficiency, Federal agencies are making progress in their use of distributed energy resources (DER), combined heat and power, and renewable energy. According to a recent market assessment conducted by FEMP, as much as 1.5 gigawatts could be generated by combined heat and power systems at Federal facilities. These projects could save the government approximately \$170 million annually in energy costs. To date, 70 Federal sites have participated in combined heat and power (CHP) screenings offered by FEMP. A number of Federal agencies, including the Departments of Defense, Energy, Transportation, Interior, Veterans Affairs, EPA, and many others, are already making use of DER and CHP technologies, including internal combustion engines, fuel cells, microturbines, and photovoltaics. In addition, agencies are using their purchasing power to install on-site renewable energy projects as well as buying renewable power for their facilities.

TRANSPORTATION AND FLEET MANAGEMENT

Major Goals under E.O. 13149, E.O. 13150, and EPACT

- *Reduce annual Federal fleet petroleum consumption by 20 percent by 2005, compared to 1999 consumption level.*
- *Continue to acquire alternative fuel vehicles as required by EPACT and use alternative fuel in AFVs the majority of the time by 2005.*
- *Increase the fuel efficiency of non-AFV acquisitions at least 1 mile per gallon by 2003 and 3 miles per gallon by 2005.*
- *Implement mass transportation fringe benefit programs to help reduce traffic congestion and air pollution.*

The Federal government is working to reduce petroleum consumption through improvements in fleet fuel efficiency and the use of alternative fuel vehicles (AFVs) and alternative fuels. The Federal agencies have made significant progress in the acquisition of alternative fuel vehicles. Today more than 55,000 alternative fuel vehicles are used daily by Federal agencies. Reduced petroleum use and the displacement of petroleum by alternative fuels will help promote markets for more alternative fuel and fuel efficient vehicles, encourage new technologies, enhance the United States' energy self-sufficiency and security, and ensure a healthier environment.

POLICIES

The Energy Policy Act of 1992 (EPACT) requires that in FY 2000 and beyond, 75 percent of light-duty vehicle Federal acquisitions in covered fleets are to be AFVs. Executive Order 13149, *Greening the Government Through Federal Fleet and Transportation Efficiency*, directs Federal agencies to fulfill the intent of EPACT to reduce reliance on petroleum products. Through a combination of AFV acquisitions, increased alternative fuel use in AFVs, improved efficiency of non-AFV acquisitions, reductions in fleet sizes and vehicle miles traveled, and improvements in overall fleet operating efficiencies, agencies are required to decrease the annual petroleum consumption of Federal fleets by 20 percent by 2005 compared to 1999 consumption.

In general, the EPACT requirements apply to agency fleets of 20 or more light-duty vehicles (vehicles under 8,500 pounds) that are centrally fueled (or capable of being centrally fueled) and are primarily operated in metropolitan areas with populations of 250,000 people or more. Vehicles that do not meet these requirements are considered geographically exempt from the EPACT requirements. E.O. 13149 applies to all Federal agencies with a fleet of 20 or more vehicles nationwide, regardless of the size and the metropolitan area. Both EPACT and the E.O. provide certain exemptions for law enforcement, emergency, and national security vehicles.

The Federal Employees Clean Air Incentives Act, enacted in 1993 (Public Law 103-172), was designed to improve air quality and reduce traffic congestion by having Federal agencies encourage their employees to commute by means other than single-occupancy vehicles. The legislation permitted the head of each agency to establish programs to promote initiatives such as issue transit passes; furnish space, facilities and/or services to bicyclists; and provide non-monetary incentives, such as alternative work schedules, flextime, telework, flexiplace, and related parking and shuttle arrangements. The *Transportation Equity Act for the 21st Century* (TEA-21), enacted in 1998 (Public Law 105-178), authorized highway, highway safety, transit, and other surface transportation programs through 2004. The TEA 21 Act reaffirmed the importance of mass transit to improve air quality and reduce traffic congestion.

Executive Order 13150, *Federal Workforce Transportation*, helps reduce Federal employees' contribution to traffic congestion and air pollution and expands their commuting alternatives. Federal agencies are required to implement mass transportation fringe benefit programs under this Order.

ACCOMPLISHMENTS

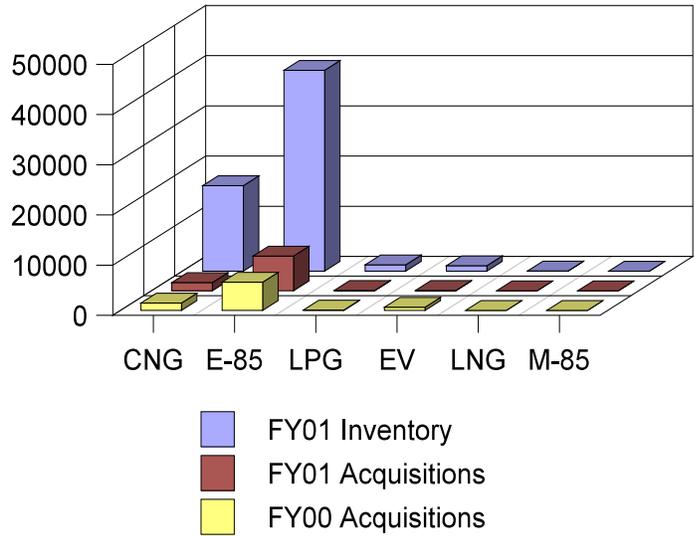
Federal Fleet and Transportation Efficiency. In July 2000, DOE issued guidance to agencies to comply with the requirements of E.O. 13149. This guidance addressed preparing compliance strategies, designating responsible senior level officials, and reporting compliance data. Also in July 2000, DOE and GSA unveiled the Federal Automotive Statistical Tool (FAST), which is an on-line reporting system that Federal agencies must use to collect and compile petroleum consumption data, conventional and alternative fuel vehicle acquisitions and inventory, alternative fuel consumption in AFVs, fuel efficiency of vehicle acquisitions, and vehicle operational data. Agencies' vehicle acquisition data are reported for the prior, current, and planning fiscal years.

In FY 2000, the latest year for which data are available, fleet petroleum (gasoline and diesel) consumption in the 18 Federal agencies covered by E.O. 13149 increased by 2 percent compared to the FY 1999 baseline. This is not surprising considering that E.O. 13149 was signed in April 2000 and agencies only had a few months in FY 2000 to plan for and implement measures to reduce petroleum consumption. In addition, FY 2000 was the first year that agencies were asked to report petroleum consumption data, and many agencies experienced difficulties collecting accurate information. Therefore, it is likely that many agencies inaccurately reported baseline petroleum consumption. As agencies modify operating procedures to collect these data, the reports will become more accurate.

Despite the slight overall increase in consumption, the Departments of Energy, Labor, Justice, and State, EPA, and NASA all reported reductions in petroleum consumption. The Defense Logistics Agency, the Marine Corps, and the Navy also reported reductions in petroleum consumption; however, DOD as a whole reported a 2.4 percent increase.

For EPACT- covered Federal agencies, FY 2000 AFV acquisitions accounted for only 44 percent of covered new light-duty vehicle acquisitions, short of the 75 percent requirement for that year. However, seven of the 18 covered agencies and two military services did meet the 75 percent requirement. These include the Departments of Energy, Housing and Urban Development, and State, EPA, Executive Office of the President, GSA, the United States Postal Service, the U.S. Marine Corps, and the U.S. Corps of Engineers. In total, the 18 covered agencies acquired 7,949 AFVs, and non-covered, independent agencies acquired an additional 28 AFVs, for a total Federal acquisition of 7,977 AFVs. These acquisitions bring the total inventory of AFVs in the Federal fleet to more than 55,000, of a total FY 2000 inventory of 457,000 light-duty vehicles.

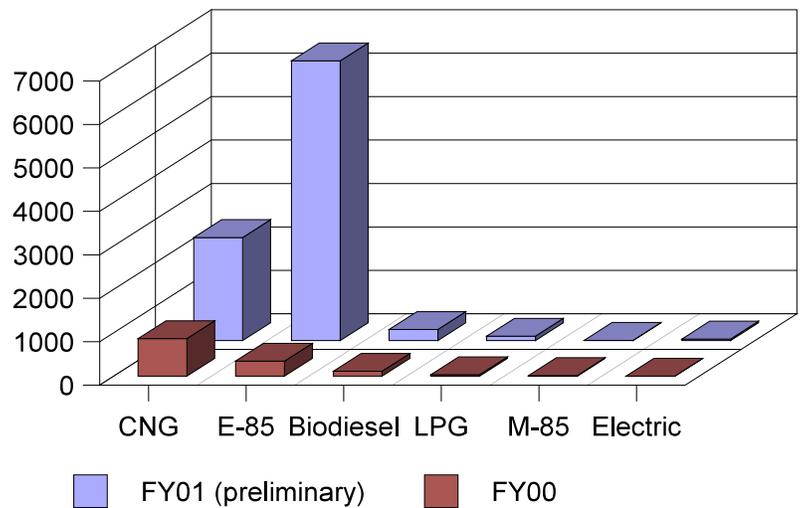
Federal AFVs by Fuel Type



Beyond new AFV acquisitions, Section 401 of Executive Order 13149 allows additional EPACT credits to be generated by Federal agencies through the use of biodiesel blends (typically B20, a blend of 20 percent biodiesel with 80 percent petroleum diesel) and the purchase of AFVs that operate solely on alternative fuel, i.e., dedicated AFVs. Executive agencies generated 1,266 additional credits in FY 2000 for a total of 9,215 EPACT AFV credits. Preliminary data indicates that in FY 2001, AFV acquisition levels were about the same as in FY 2000.

Federal agencies consumed more than 1.4 million gasoline gallon equivalents (GGE) of alternative fuels in FY 2000, replacing gasoline and diesel fuel. Consistent with the number of AFVs in operation, the largest consumers of alternative fuels are the USPS (60 percent) and DOD (19 percent). The most commonly used alternative fuels are compressed natural gas (CNG) at 63 percent, E-85 (85% ethanol, 15% gasoline) at 25 percent, and biodiesel at 8 percent. The remaining 4 percent is largely comprised of liquefied petroleum gas (LPG).

Alternative Fuel Consumption (1,000 GGE)

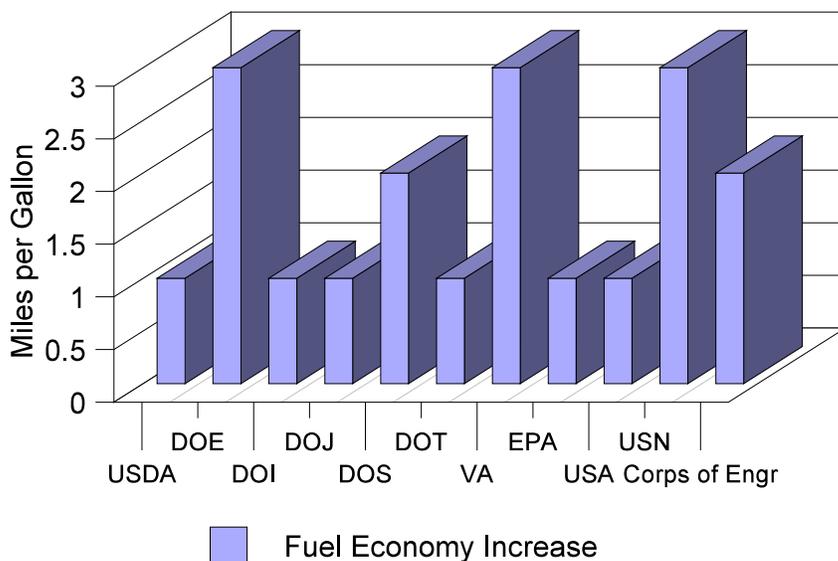


Preliminary data for FY 2001 show a sixfold increase in CNG, E-85 and biodiesel fuel since the previous year, from 1.3 to 8.6 million GGEs. This increase may be due to several factors. First, Executive Order 13149 was signed in April 2000, more than half way through the fiscal year. It was at that point that each agency began to develop procedures for tracking and analyzing its fuel consumption more closely. Second, GSA allowed Federal fleets to use biodiesel in the GSA-leased diesel equipment in FY 2001. As a result, there has been a significant increase in biodiesel fuel use. Third, because of the difficulty with tracking the alternative fuel use through the credit cards, agencies may have overestimated the amounts reported for E-85, and to some degree for CNG.

Despite reporting total alternative fuel consumption, only 12 agencies reported data necessary to calculate the percentage of alternative fuel used in AFVs. Executive Order 13149 requires that by FY 2005 agencies use alternative fuels in their AFVs a majority of the time. Tracking this data in the intervening years will allow each agency to evaluate its progress towards meeting this requirement. It appears that most agencies will need to make significant efforts in expanding their alternative fuel infrastructures and use to meet this requirement by FY 2005.

Eleven agencies either met or exceeded the goal of increasing fuel efficiency of non-AFV light-duty vehicle acquisitions by one mile per gallon by FY 2002, compared to FY 1999 acquisitions. These organizations, with fuel efficiency (miles per gallon) increases achieved in parentheses, are: the Departments of Agriculture (1), Energy (3), Interior (1), Justice (1), State (2), Transportation (1), and Veterans Affairs (3), EPA (1), the Army (1), the Navy (3), and the Army Corps of Engineers (2). The majority of these agencies plan to continue increasing the fuel efficiency of new vehicle acquisitions to meet or exceed the petroleum consumption requirements of E.O. 13149.

Agencies' FY 2000 Fuel Efficiency Increases



Several agencies and individual fleets have demonstrated a strong commitment to acquiring and using alternative fuel vehicles and reducing petroleum consumption. The following are examples of these Federal efforts:

- The Defense Energy Support Center (DESC), part of DLA, has made access to reasonable prices for B-20 (biodiesel) and E-85 (85% ethanol) fuel become a reality for many Federal fleets across the country. Fiscal year 2002 data shows that DESC has sold over 500,000 gallons of B-20 and closed to 17,000 gallons of E-85 to Federal fleets. DESC contract

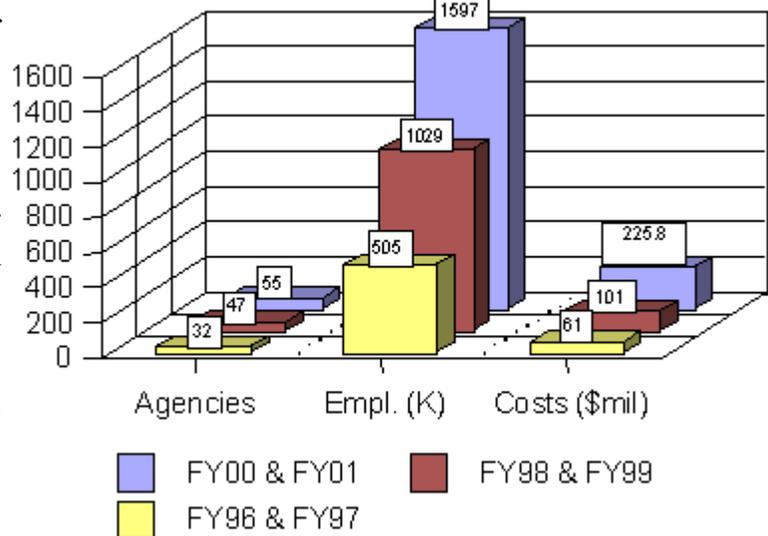
clause guarantees the quality of these fuels and ensures that there will not be any adverse impact on the equipment.

- DOE’s Savannah River Site has replaced more than 530 gasoline vehicles with flexible-fuel E-85 vehicles, constructed two new fuel stations onsite, programmed electronic card readers to only allow flexible-fuel vehicles to fuel with E-85, and used approximately 357,000 gallons of E-85 since the stations opened in FY 2000.
- DOI’s National Park Service (NPS) began replacing gasoline vehicles with neighborhood electric vehicles (NEV). Working with Ford Motor Company’s Think Division, 500 NEVs will be placed in national parks throughout California in FY 2002, in addition to the nearly 50 NEVs already placed in service in other national parks across the country.
- USPS leads the Federal government in operating nearly 8,000 CNG vehicles and more than 21,000 E-85 flexible-fuel vehicles. Working in partnership with the states of California and New York, DOE, Ford Motor Company, several other state and local agencies, and public utilities, USPS has placed 500 electric vehicles into service delivering mail in California, New York, and Washington, DC.

Federal Workforce Transportation. GSA compiles information on Federal workforce transportation, and is responsible for facilitating the establishment of program guidance, providing technical advice to agencies, and reporting on these matters to the President and the Congress.

GSA’s FY 2000 - 01 report includes 55 agencies, almost twice the number of agencies that participated in various incentives to reduce traffic congestion and air pollution in FY 1996 - 97. These agencies have almost 1.6 million employees commuting by means other than single-occupancy vehicles, up from about 500,000 in the 1996 -97 reporting period. A total of \$226 million was invested during FY 2000 - 01 in support of these programs, more than three and a half times the amount spent in FY 1996-97.

Federal Workforce Transportation Initiatives



Fifty-four agencies reported that, during FY 2000 - 01, they spent \$135 million on mass transit subsidies, such as metrocheks, bus tokens, vouchers, and cash reimbursements, for 255,000 employees. Almost 35,000 employees biked daily to work, with 46 agencies providing some type of bicycle accommodations at a cost of \$306,000. A total of \$91 million was provided to 1.3 million employees for incentives such as alternative work schedules, flextime, telework/flexiplace, carpools, vanpools, and shuttle service.

RECOMMENDATIONS

BUILDING PARTNERSHIPS AND ENHANCING EDUCATION

- Agencies should consider the range of energy and environmental factors when making an acquisition. “Green” or “sustainable” purchasing should be broadly defined to encompass the wide variety of sustainable products, including recycled content products, ENERGY STAR® and other energy- and water-efficient products, environmentally preferable products and services, biobased products, and alternative fuels and vehicles.
- By July 1, 2003, DOE and EPA should prepare, through an inter-agency workgroup, consisting at a minimum of OFEE, DOD, GSA, and USDA, a government-wide, comprehensive green purchasing education and outreach plan. The plan should cover the requirements of the Greening the Government Executive Orders and consider the use of e-training courses, the dissemination of case studies, and the identification of key acquisition-related conferences and other educational information.
- Agencies should explore the feasibility of adopting the model of the Federal Network for Sustainability (FNS) in other geographic regions. FNS is an alliance of Federal agencies who share staff, authorities, and experience to collectively reduce waste, pollution, energy consumption, and implement other green practices.
- Agencies and facilities should inform states, local communities, tribes, and private sector entities about their agency/facility environmental management systems (EMS) actions, and as appropriate, work with them in partnership on EMS training, development, and implementation.
- EPA, DOE, and major procuring agencies should convene a green products trade fair for vendors and procurement officials in order to promote Federal purchasing of recycled content products, ENERGY STAR® and other energy- and water-efficient products, environmentally preferable products and services, biobased products, and alternative fuels and vehicles. The trade fair should highlight small, minority, and women-owned sources of these products and services, as well as products and services available through the National Industries for the Blind and the National Industries for the Severely Handicapped.

IMPROVING ACCOUNTABILITY

- The head of each agency should assure full compliance with statutory and Executive Order requirements addressed in this report by establishing, by July 1, 2003, goals for meeting each requirement, developing affirmative procurement and/or action plans, and tracking and measuring progress.

- Building on the scorecards developed under E.O. 13123 and E.O. 13149, OMB and OFEE should develop measurement and tracking tools by July 1, 2003, to score agency progress in meeting each requirement.

BUDGETING FOR SUSTAINABILITY

- OMB should ensure that agency requests for appropriations for new construction and major modernization projects take into account life-cycle costs, including long-term energy, environmental, and operational costs.
- Agency chief financial officers should ensure that their annual budget submissions to OMB allocate funds for implementing the energy and environmental Executive Orders.

BUILDING SUSTAINABLE INFRASTRUCTURE

- To improve the use of alternative fuels and to increase compliance with EPC Act and E.O. 13149, agencies should do the following:
 - GSA Fleet Management Centers and agencies should work with area agency fleet managers to encourage local fuel providers to establish alternative fueling sites and negotiate better alternative fuel prices.
 - By July 1, 2003, agencies' senior transportation officials should establish policies to require drivers to operate alternative fuel vehicles on alternative fuel, to the maximum extent practicable, in areas where alternative fuel infrastructure exists.
 - By July 1, 2003, agencies' senior transportation officials should work with DOE and GSA to resolve alternative fuel use tracking issues with fuel providers.
- To build on current Federal sustainable building practices, OMB should issue guidance that would require that all new Federal buildings and total renovations of existing buildings strive for a minimum rating of Silver in the Leadership in Energy and Environmental Design (LEED) or similar sustainable building rating system where life-cycle cost-effective.
- To enhance and coordinate green purchasing, OFEE and OMB should work with agencies to ensure that energy and environmental considerations are incorporated into contracting forecasts, service contracts, e-catalogs, and source selection factors, including past performance factors. OFEE and OMB also should encourage agencies to incorporate green purchasing into their environmental management systems.
- To promote sustainable practices, by July 1, 2003, OFEE and DOE should coordinate their awards programs to reward Federal agency progress for exemplary sustainable operations

in waste prevention, recycling, affirmative procurement of the range of green products and services, energy efficiency, the use of environmental management systems, designing and constructing sustainable buildings, alternative fuel usage, and electronics stewardship.

CONTINUING LEADERSHIP

- Federal agencies should continue to demonstrate leadership in sustainability through participation in such challenge programs as EPA's recently announced Resource Conservation Challenge, WasteWise, Waste Minimization, National Environmental Performance Track, and other related programs and partnerships.
- OFEE should work with EPA, other agencies, and leading electronics businesses to pursue a National Electronics Stewardship Challenge, inviting Federal agencies to commit to using their acquisitions to leverage the development of an integrated, closed-loop approach to the design, manufacture, de-manufacture, reuse, and recycling of electronic equipment.
- GSA should continue to expand the Federal workforce transportation initiatives, including parking limitations, to further improve air quality and reduce traffic congestion, and better quantify the environmental benefits of this program.

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Ms. Dana Arnold, White House Task Force on Waste Prevention and Recycling

Mr. John Coho, U.S. Department of Defense

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Mr. Will Garvey, U.S. Environmental Protection Agency

Ms. Joan Glickman, U.S. Department of Energy

Mr. Juan Lopez, White House Task Force on Waste Prevention and Recycling

Mr. Robert Sandoli, Office of Management and Budget

Mr. Schuyler Schell, U.S. Department of Energy

Mr. Lee Slezak, U.S. Department of Energy

Ms. Cyndi Vallina, Office of Management and Budget

The entire Staff of the White House Task Force
on Waste Prevention and Recycling

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